



# Sector coupling of electricity and heat through smart district heating networks

4th International Sustainable Energy Conference  
15 – 16 April 2026, Messecongress Graz, Austria

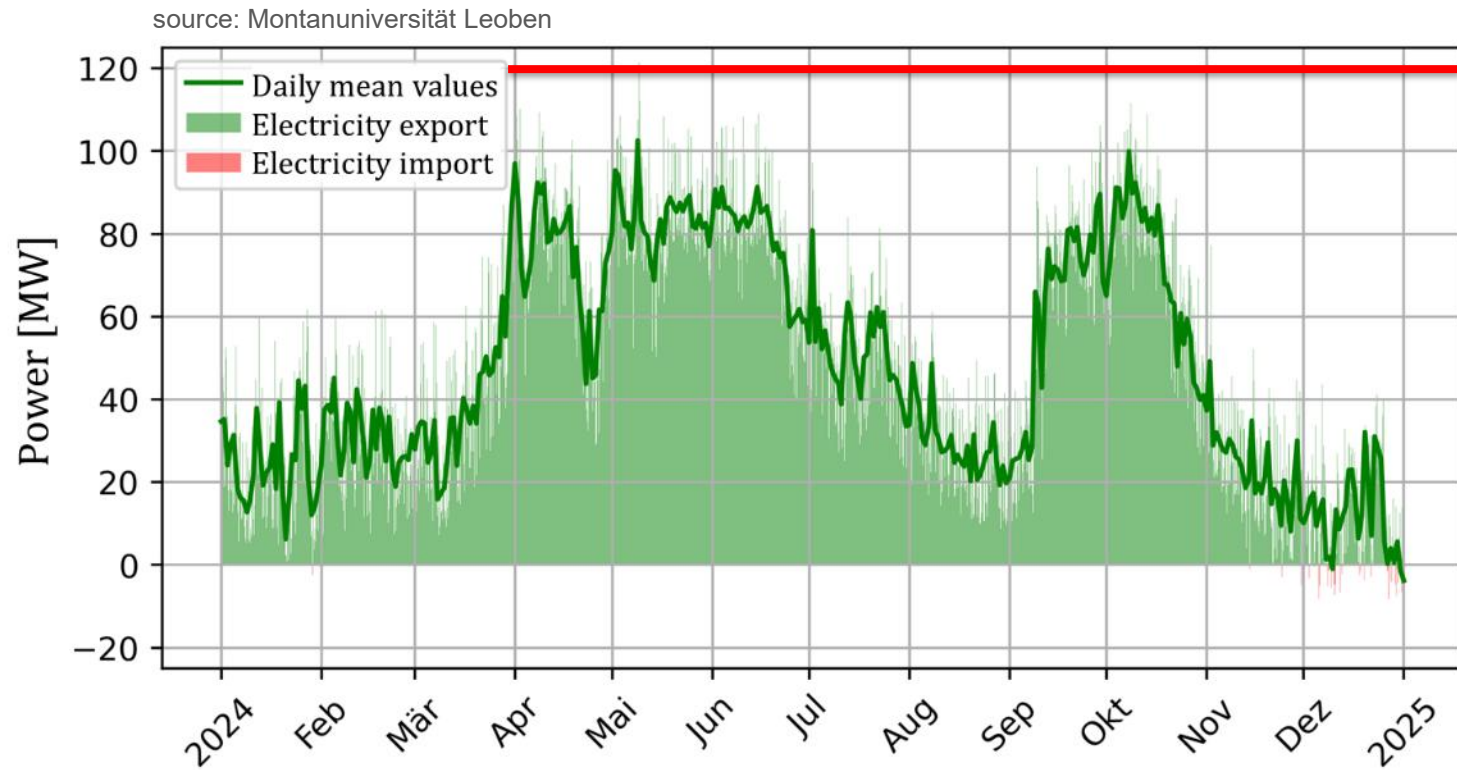
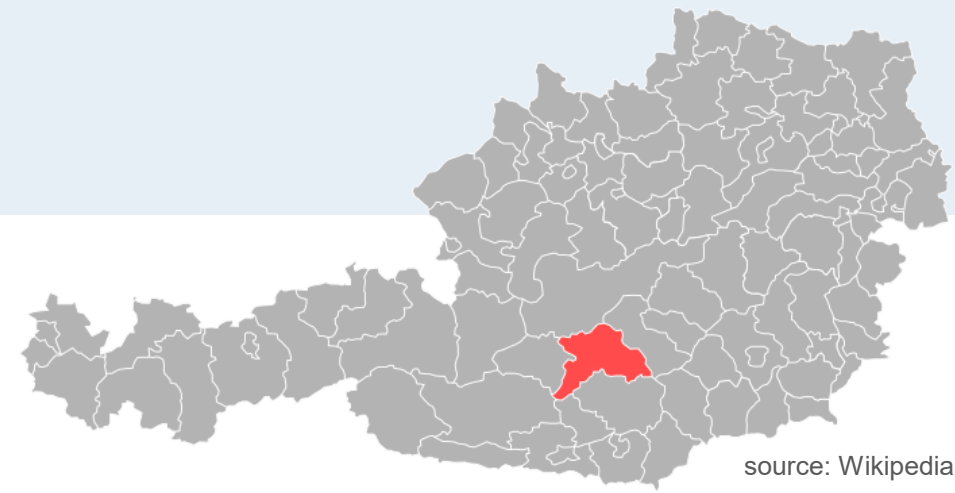
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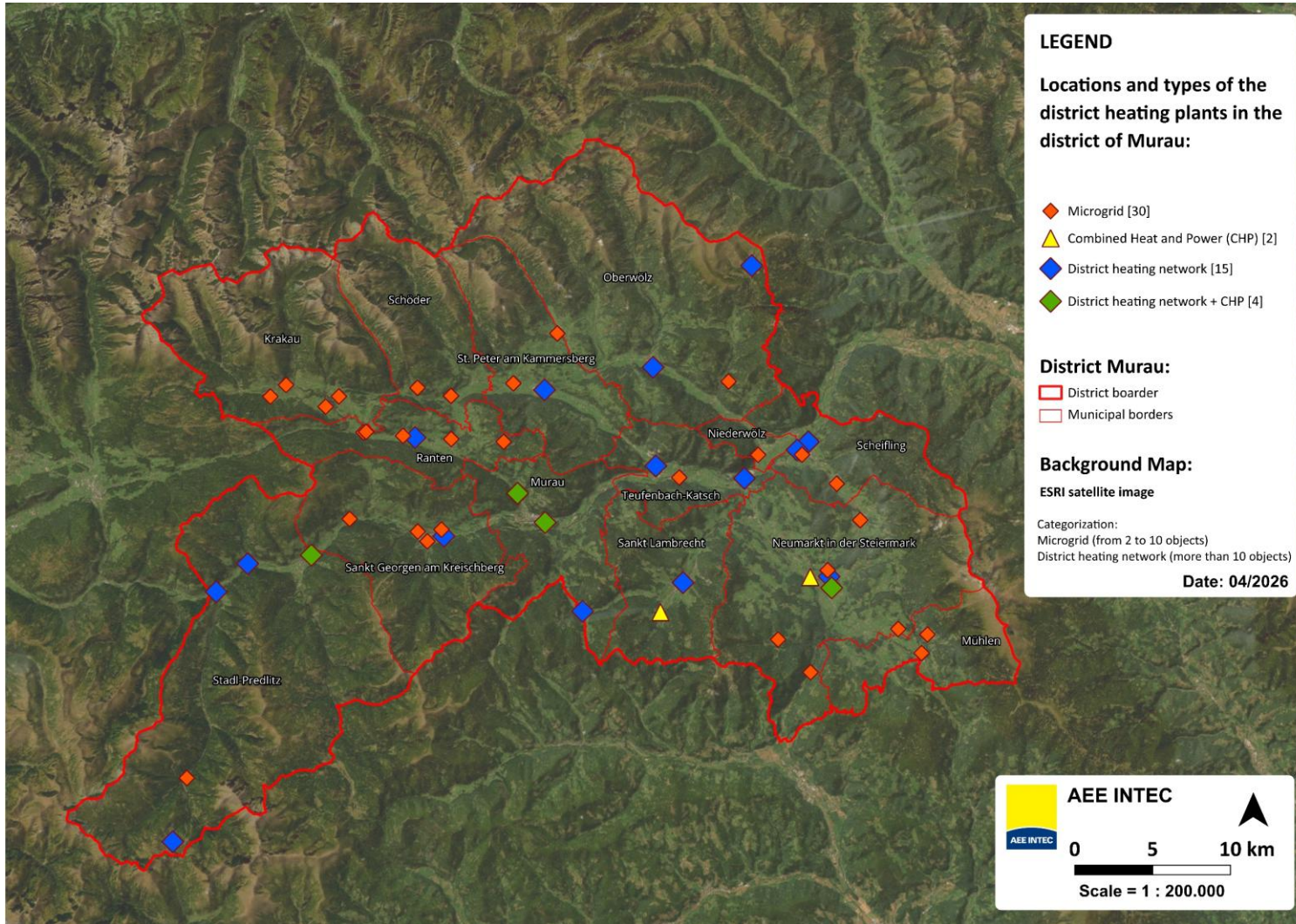


# Electricity generation in Murau

- Production mix (2020)
  - 89 hydropower plants: 88,5 MW<sub>el</sub>
  - 10 wind plants: 32 MW<sub>el</sub>
  - ~1700 PV-plants: 22,5 MW<sub>el</sub>
  - 7 biomass CHP plants: 3 MW<sub>el</sub>
  
- Excess electricity – especially in summer



# District heating plants in Murau

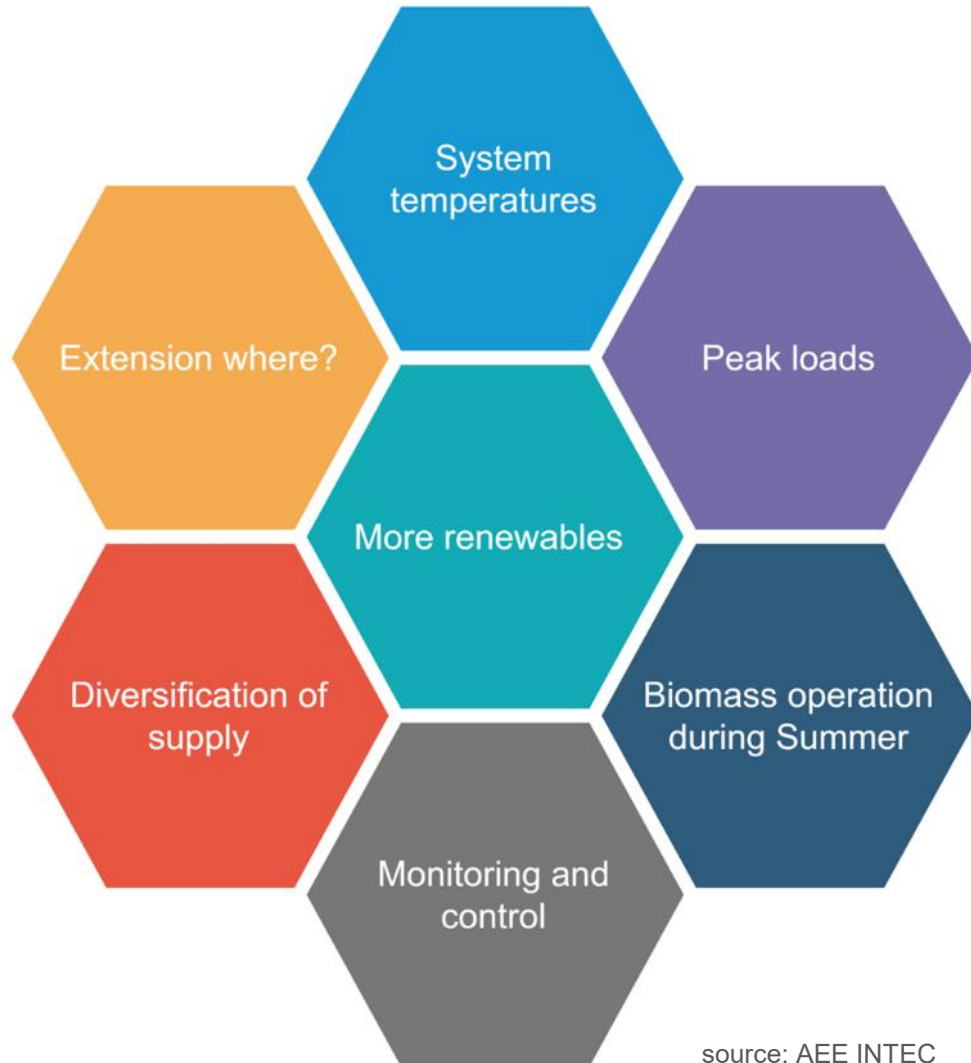


source: AEE INTEC

- 51 DH plants
- Main fuel: biomass
  - Thermal capacity: ~ 52 MW
  - Electric capacity: ~ 3 MW

# District heating systems

## Main challenges and future needs



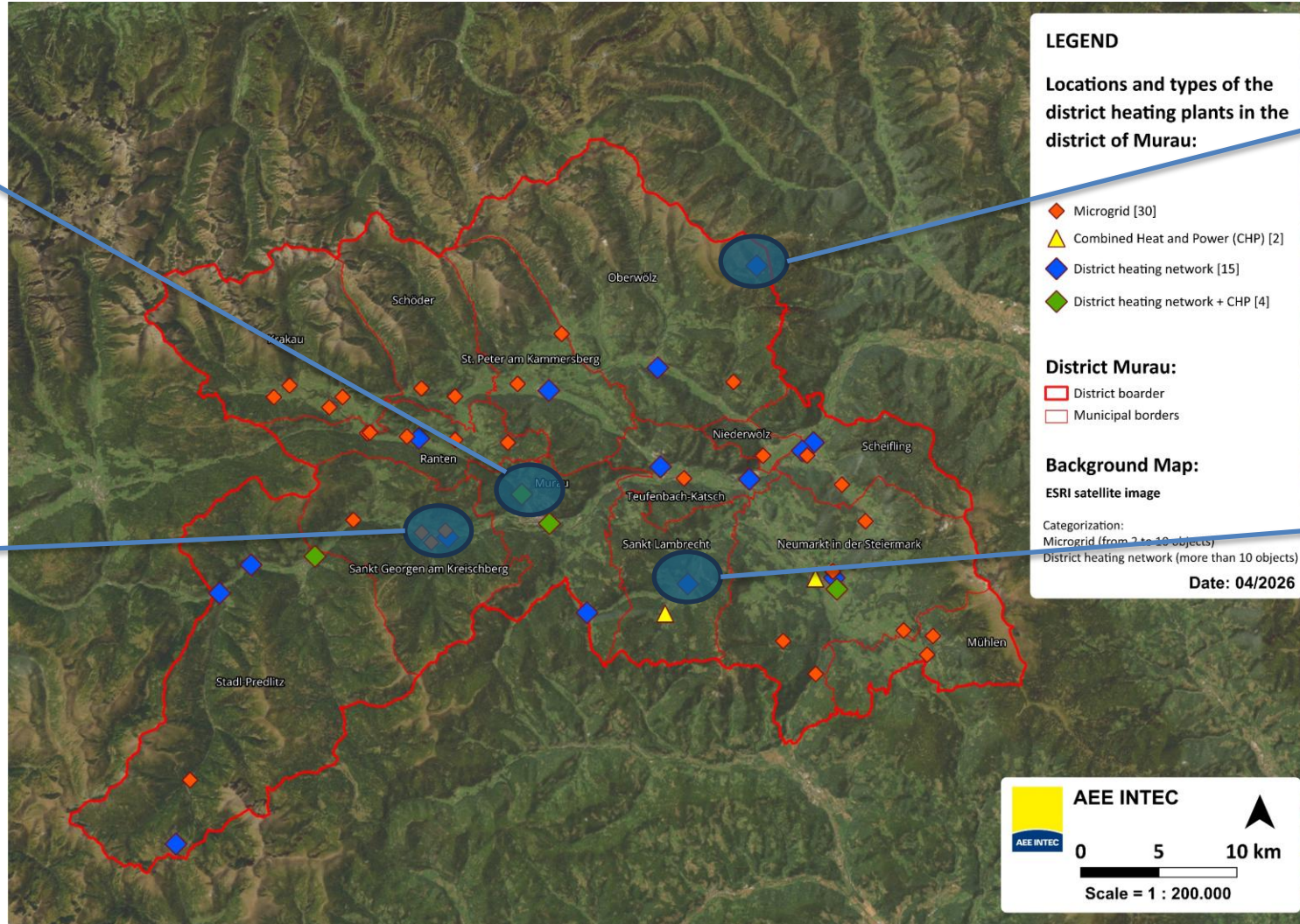
source: AEE INTEC

- Increased flexibility and system efficiency, via sector coupling technologies such as P2H, heat pumps, or CHPs
- Reduction of fossil energy share and integration of regional renewable energy sources and waste heat
- Increase system efficiency to conserve existing biomass resources

# Demonstrators

• Murauer Stadtwerke

• Biowärme St. Georgen ob Murau

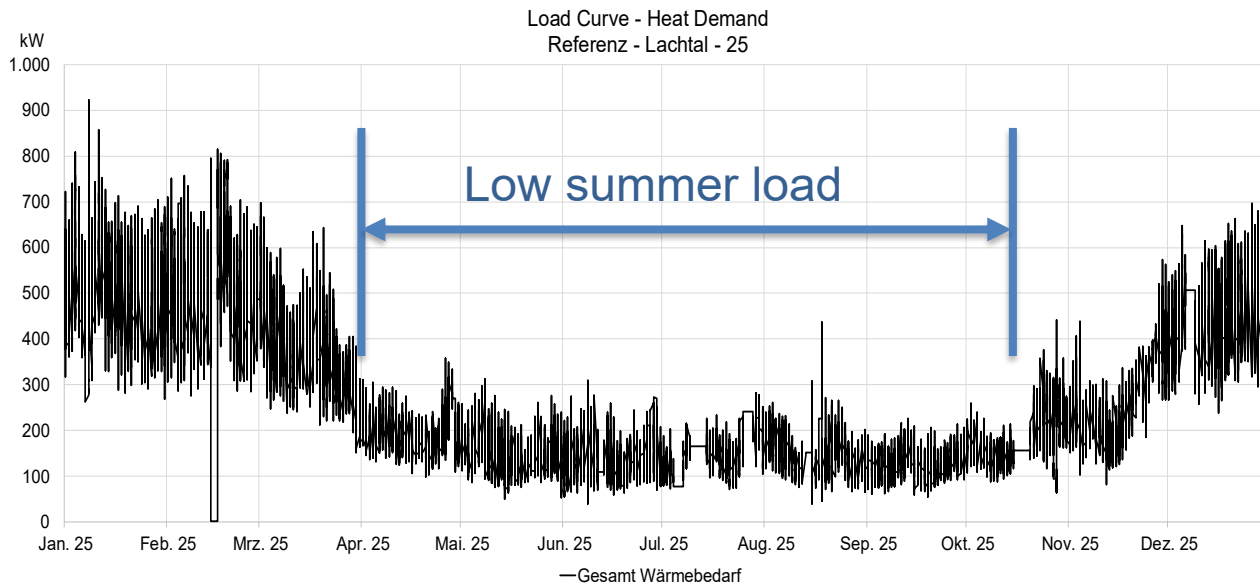


• Biowärme Lachtal

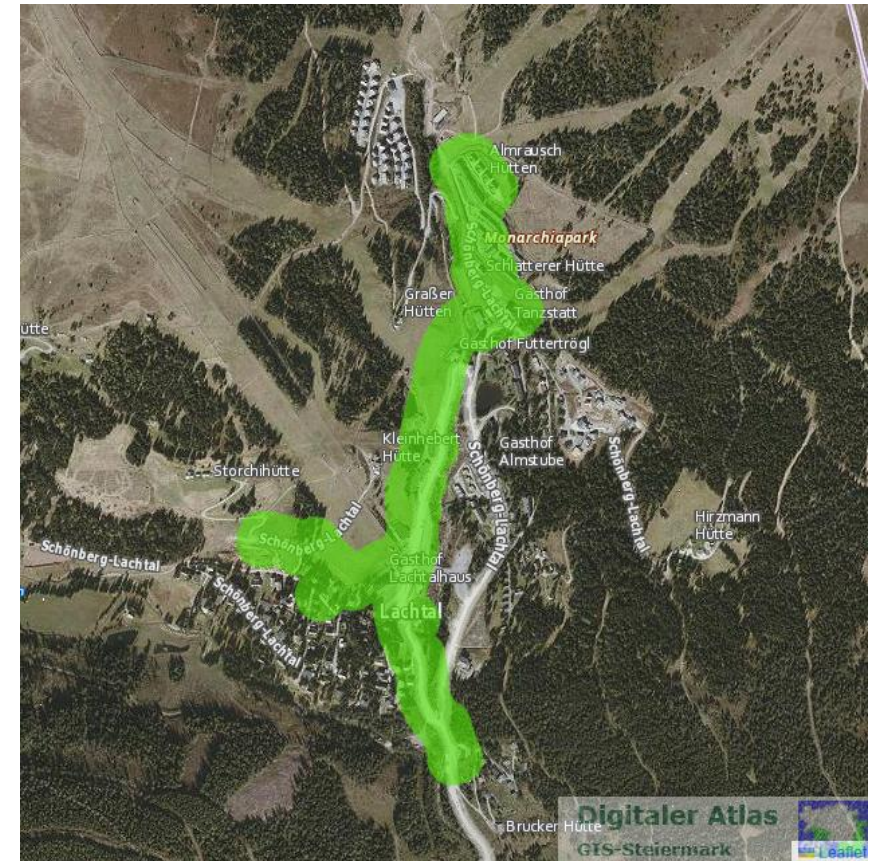
• WLG St. Lambrecht

source: AEE INTEC

- Small DH system
  - 21 customers
  - 2,1 GWh/year
  - 1 MW biomass boiler, 1 MW oil boiler

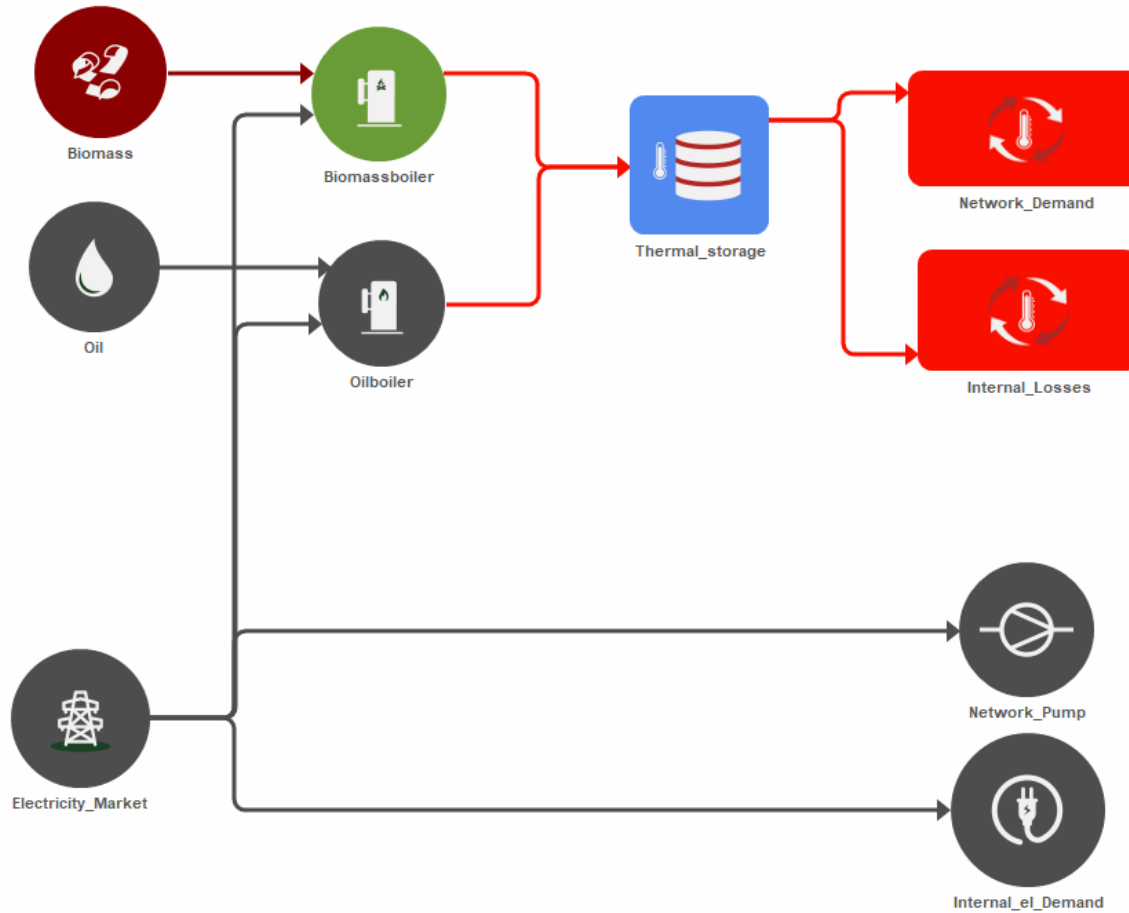


source: AEE INTEC



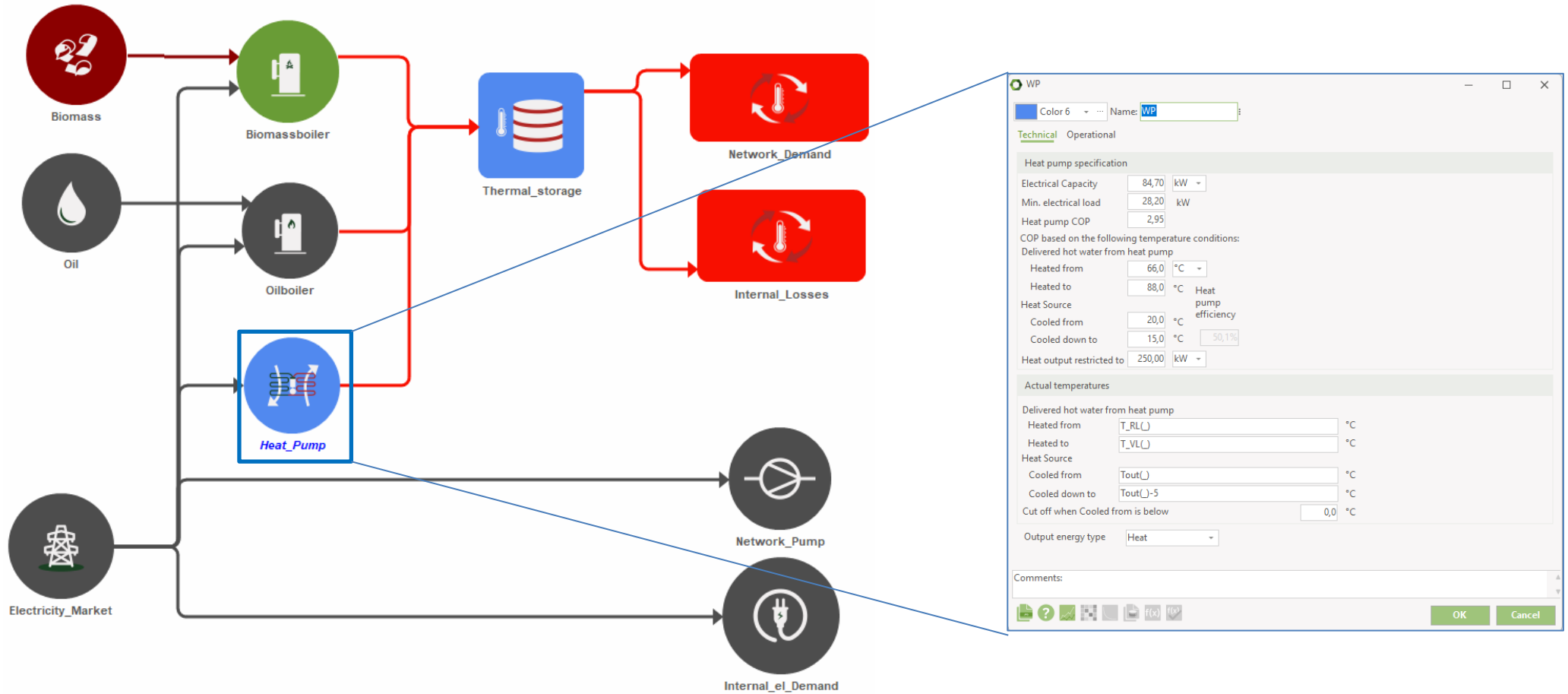
source: Land Steiermark, Digitaler Atlas

# Lachtal – Current system

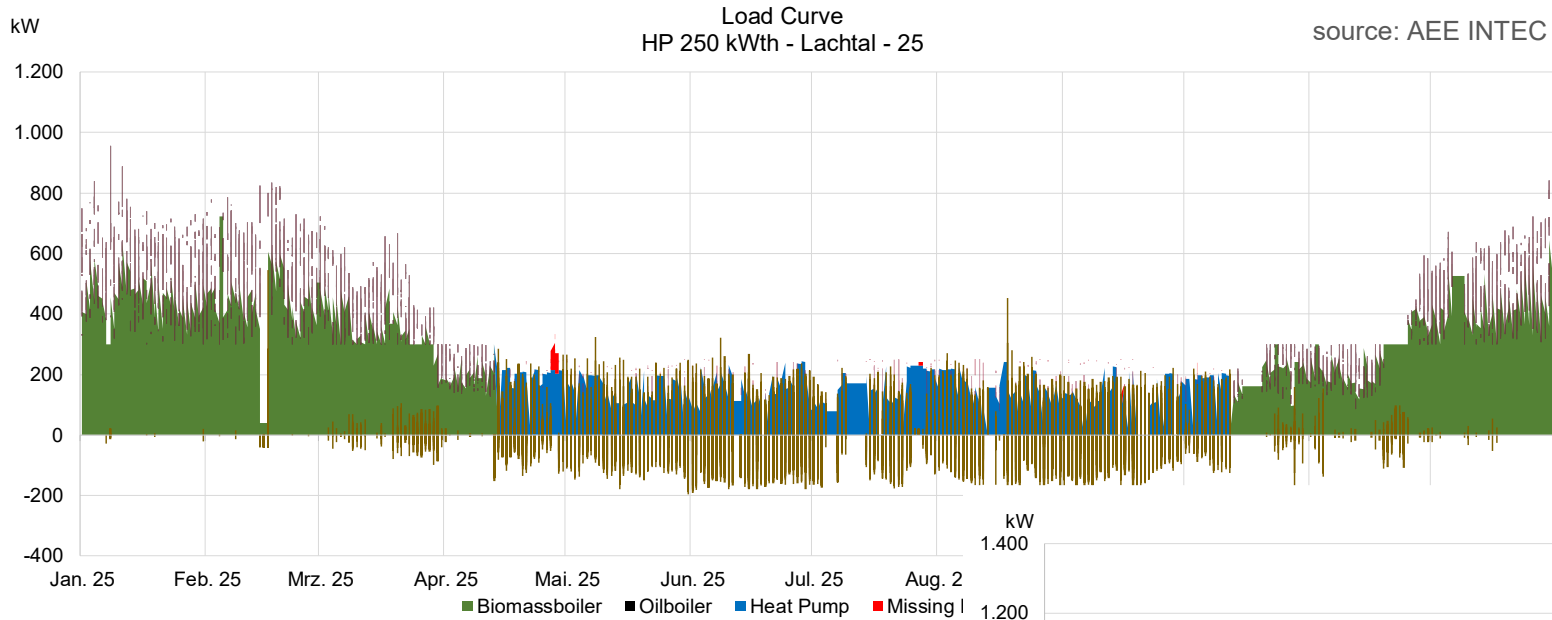


source: AEE INTEC

# Lachtal – Current system + Heat pump

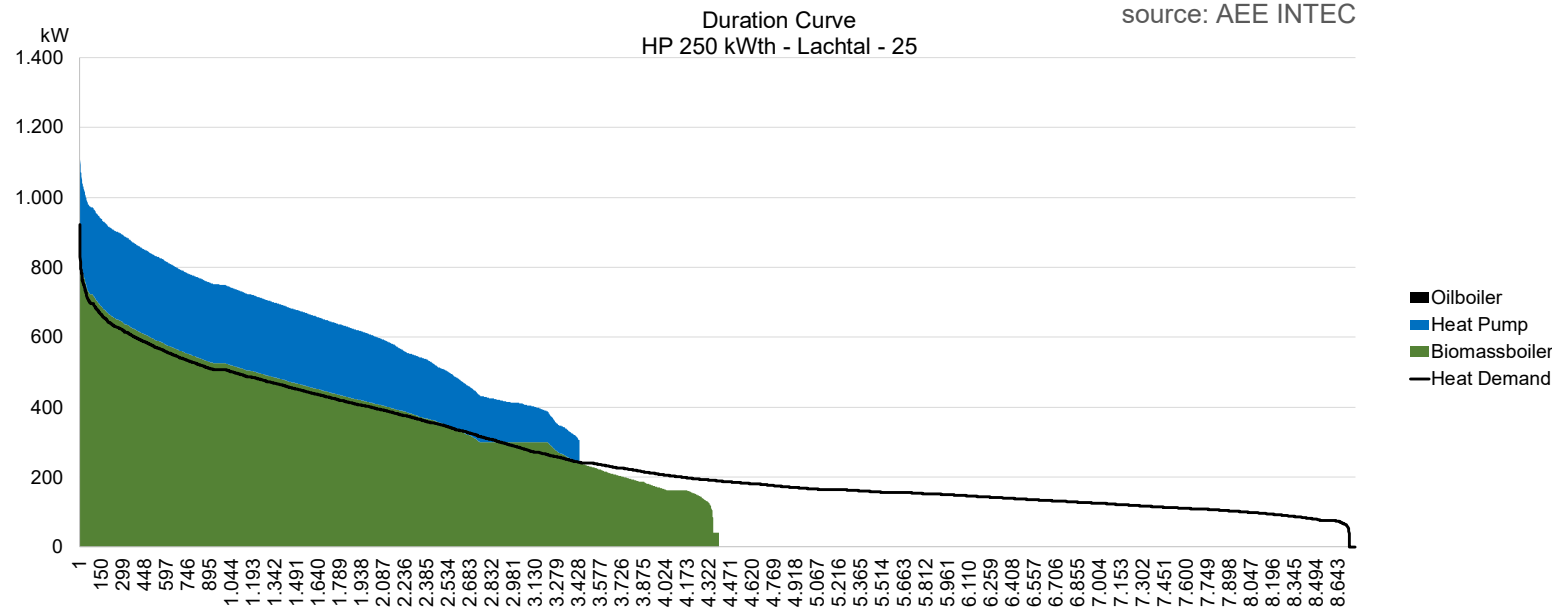


source: AEE INTEC



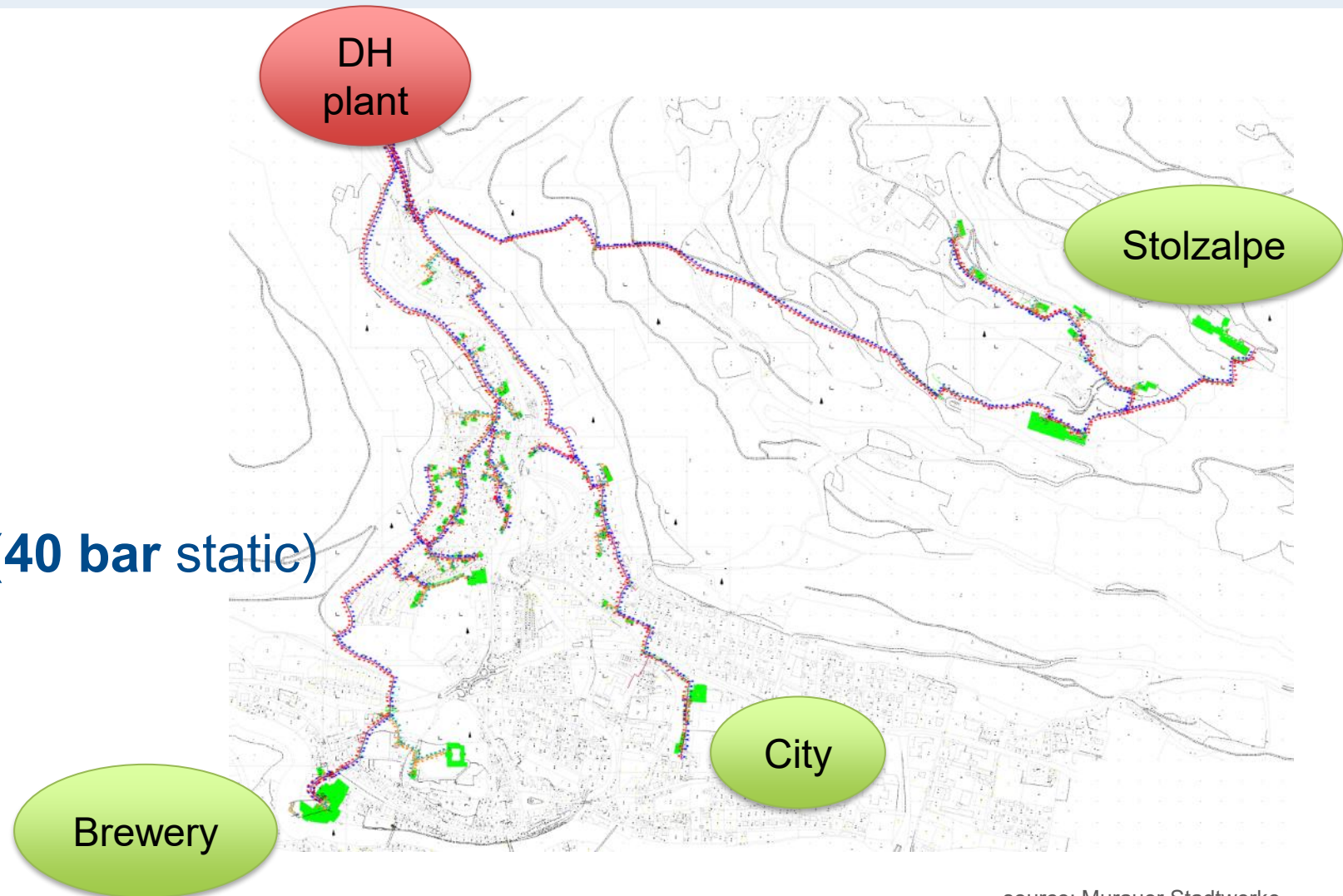
Heat pump integration  
(250 kW<sub>th</sub>) for summer  
– mid April – mid October

- Operating hours of BM boiler reduced from ~8600 to ~4400
- Part load operation of BM boiler avoided (load < 150 kW<sub>th</sub>)
- No oil boiler required for maintenance of BM boiler



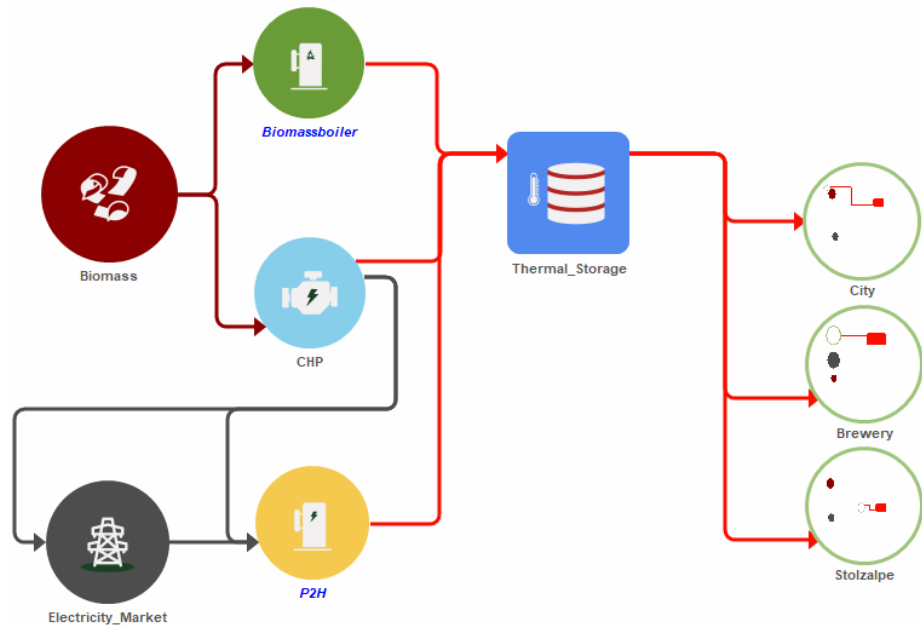
# Murau

- Medium DH system
- 150 customers
  - 10 GWh/year
  - 3 MW peak load
- 3 DH networks lines
  - Stolzalpe: 90/60°C (**40 bar static**)
  - City: 90/60°C
  - Brewery: **120/60°C**

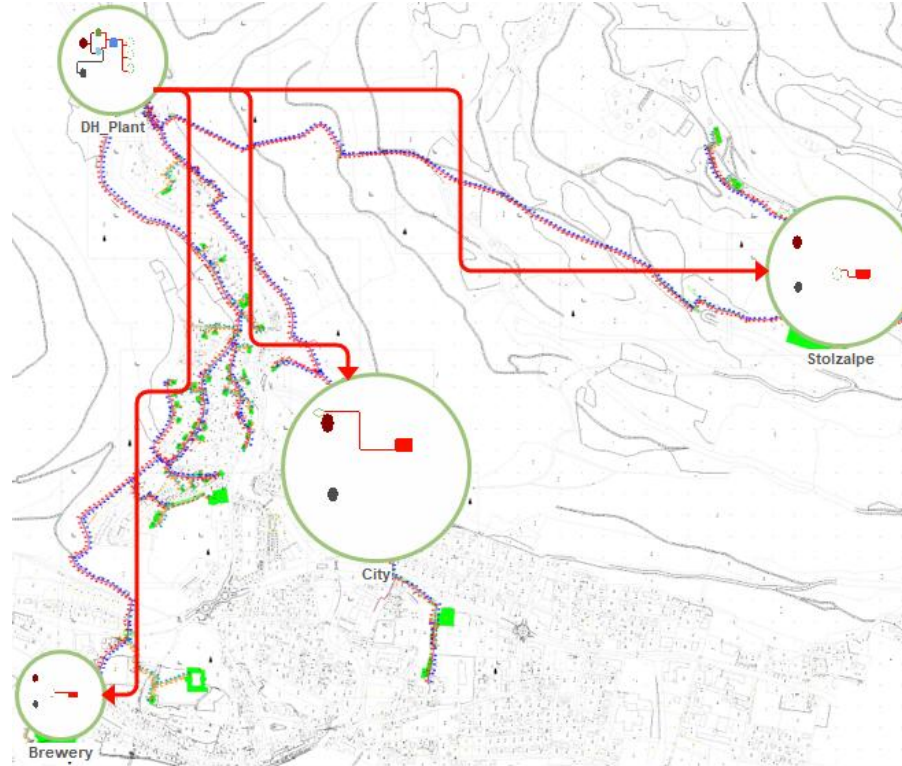


source: Murauer Stadtwerke

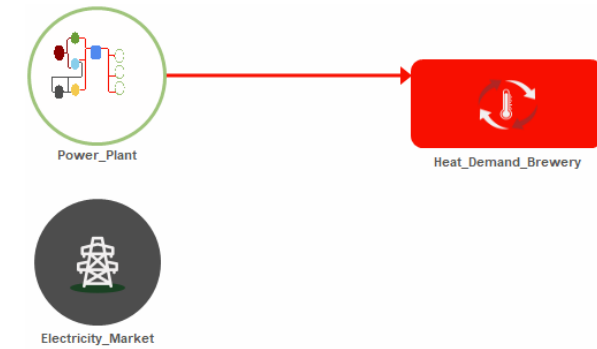
# Murau - Current system



■ DH plant

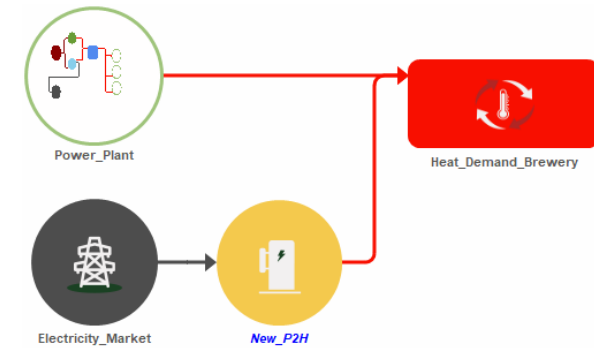
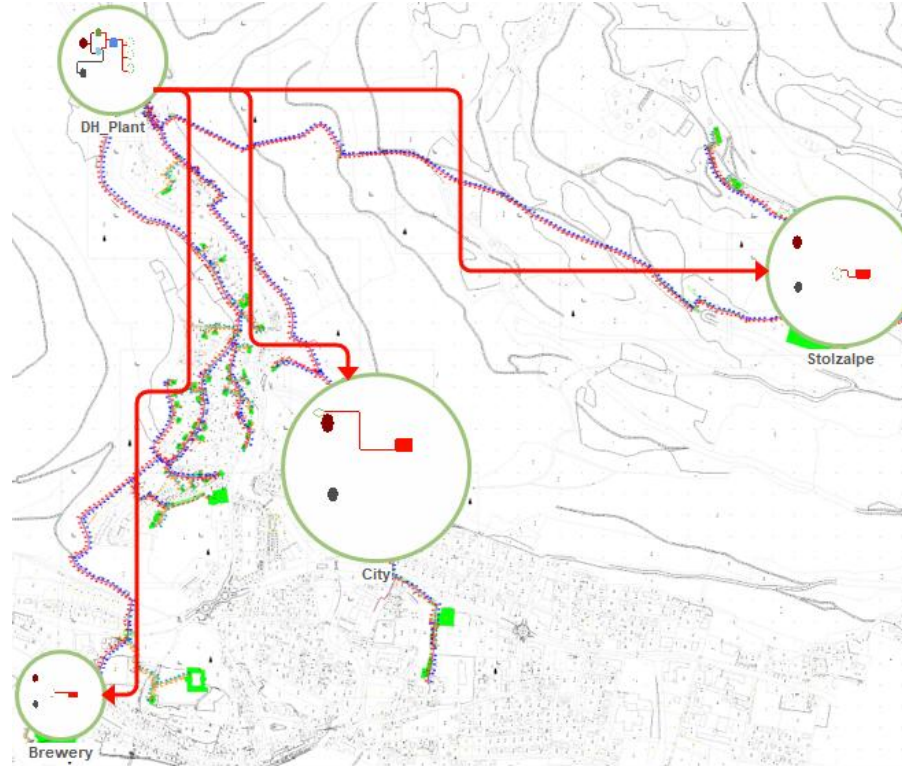
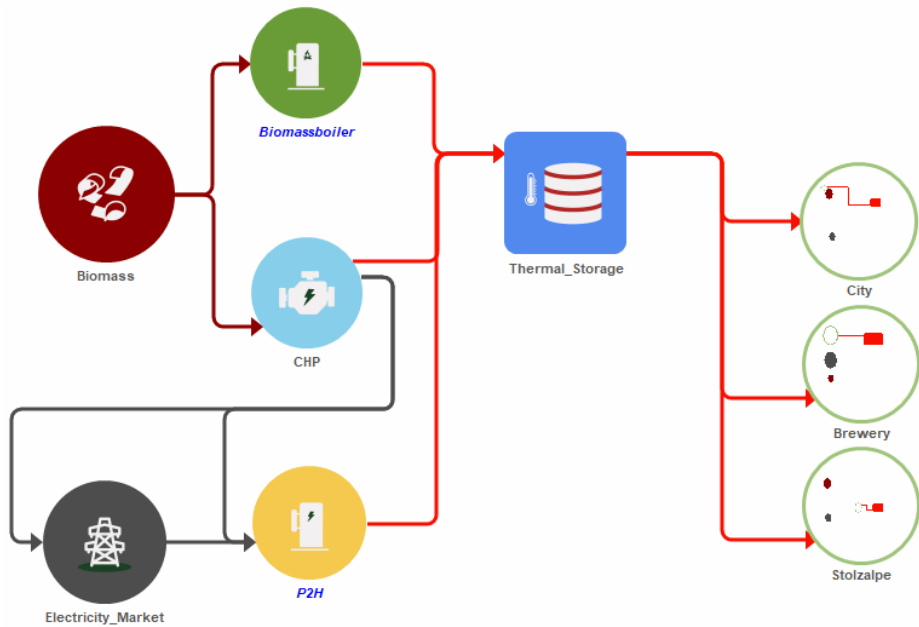


■ DH network



■ Brewery

# Murau - Current system + Power-to-Heat



- DH plant

- P2H: 1,2 MW → 2 MW

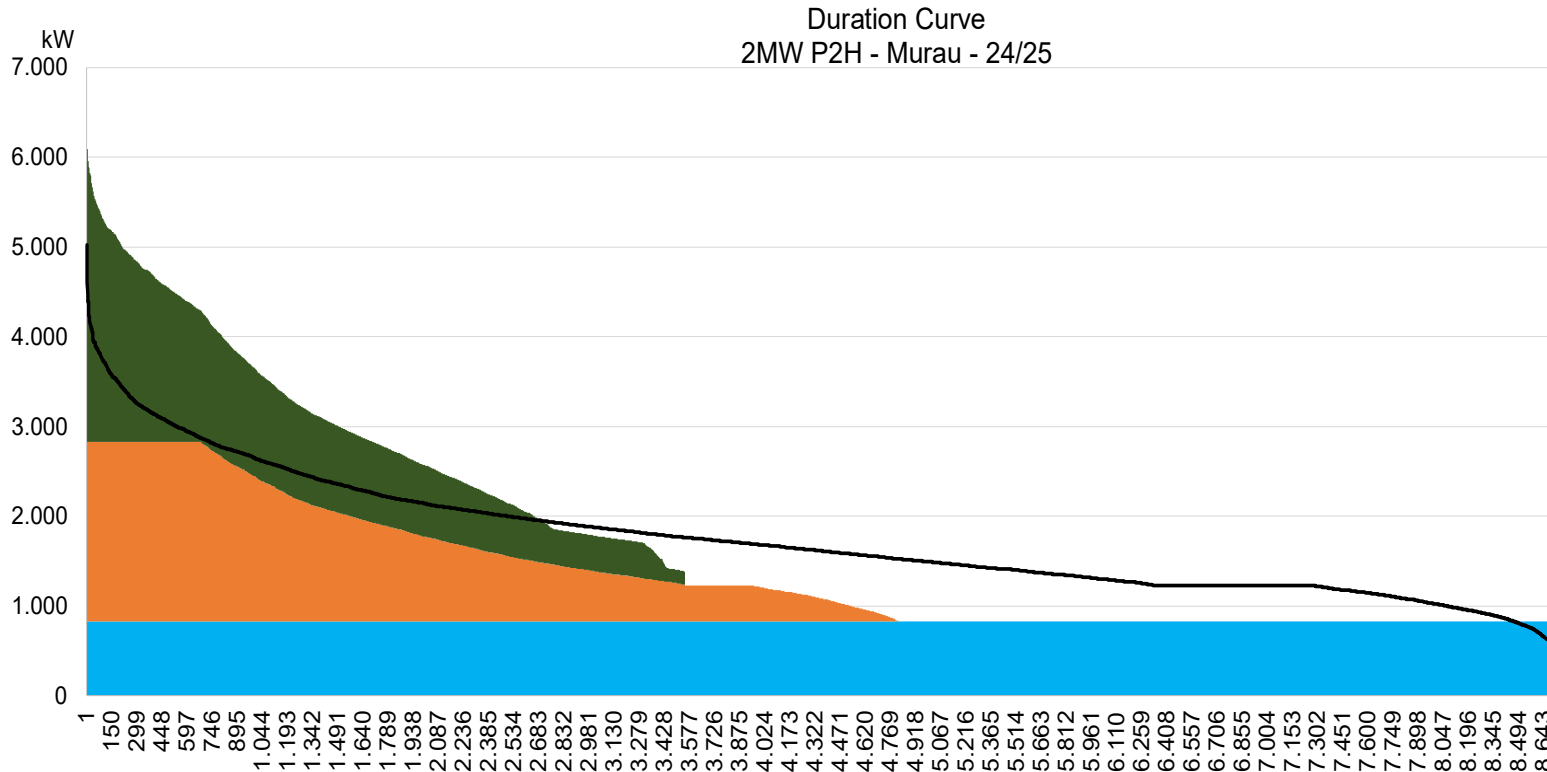
- DH network (brewery)

- T<sub>feed</sub>: 120 °C → 95°C

- Brewery

- P2H: ~0,7 MW

# Murau - results



source: AEE INTEC

- CHP cover base load
- Biomass boiler runs the whole year
- No biomass boiler in summer necessary
- Increased utilization of P2H at DH plant
- Easier operation of DH system (120°C → 95°C)

# Summary & Outlook

- DH system provide a large potential to use excess electricity
  - Especially in summer
  - Support of electricity grid
  - Market-oriented operation
  
- Outlook
  - Techno-Economic evaluation of case studies
  - Potential for roll-out across the entire district Murau
  - Impact on the electricity grid

# Biomass local heating: a new approach

## Challenges, solutions and new system approaches

**QM Fachtagung, 25.06.2026 in Salzburg (in German only)**

***Radisson Blu Hotel & Conference Centre***

- Latest updates on funding opportunities and strategies for gas network decommissioning
- New approaches to planning, analysis and municipal heat planning
- Technical developments such as summer solutions and sector coupling



source: AEE INTEC



Further information and registration:

**<https://www.aee-intec-events.at/qm-2026.html>**

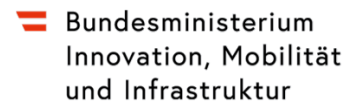


**AEE INTEC**

**IDEA TO ACTION**

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